

NEW RHOPALOCERA, AND A LIST OF SPECIES FROM THE GRAMPIAN MOUNTAINS, WESTERN VICTORIA

By NORMAN B. TINDALE, B.Sc., SOUTH AUSTRALIAN MUSEUM.

Plates xviii-xxi and text fig. 1-4.

SUMMARY.

Two new races of *Heteronympha banksii*, *H. b. nevina* from Mt. Rosea, Western Victoria, and *H. b. mariposa* from the Macpherson Range, South Queensland, are described, also a new race of *H. solandri*, *H. s. angela* from Mt. Rosea.

Pseudalmenus chlorinda fisheri is described as new from Mt. Victory—the first record of a form of this Tasmanian and Eastern mountain species in Western Victoria.

Hesperilla crypsargyra lesouefi is also described as new from Mt. William.

Several life histories and locality records are given, together with a list of 39 species taken in the vicinity of the Grampians.

The sword grass *Gahnia microstachya* Benth., foodplant of *Hesperilla crypsargyra*, and a grass (*Tetrarrhena acuminata* R. Brown) are recorded for the first time from Western Victoria and the Grampians.

The significance is discussed of the presence of these newly recorded species in terms of climate and geographical distribution.

INTRODUCTION.

Messrs. B. B. Given, J. C. LeSouef and the writer spent from 8-19th November, 1950, collecting in the Grampians and vicinity. The author again collected in the Grampians from 24-30th November, 1951, with Messrs. R. H. Fisher and J. C. LeSouef; Fisher and he also visited the Little Desert and Kiata. A third visit was made to the Grampians, with A. J. Tindale, from 25-28th December, 1951. The subalpine summit plateau of Mt. William (3,829 ft.) was collected over on 13th and 27th November and 27th December; owing to bad weather none of the visits to the summit proved to be productive. In general the 1951 season was poor, possibly a result of the unprecedented heat of the previous summer.

These visits to the Grampians area have yielded several new records as well as five new forms. Of these *Heteronympha penelope maraia* Tindale (1952) is described elsewhere, the others are presented herein.

HETERONYMPHA BANKSII BANKSII (Leach) 1814.

Plate xviii, fig. e-d; plate xix, fig. h.

Hipparchia banksii Leach, 1814, i, p. 28, pl. 10, fig. 1-2.

Heteronympha affinis Lucas, 1890, p. 1,065.

Heteronympha banksi Waterhouse and Lyell, 1914, p. 38, fig. 103-105.

In the original account, this species was indicated only as from "New Holland." The early nineteenth century date implies that the first specimens must have been taken in New South Wales, either in the general vicinity of Sydney, or along the eastern coast. At that time other places where the species is known to occur had not been visited by Europeans. Therefore I nominate as the typical race that from the Sydney district. The male example figured herein is from Clifton, and the female from Roseville; both are places in the Sydney area. These may be regarded as topotypical. A pair depicted by Waterhouse and Lyell (1914, fig. 103-105) were from Wandin, Eastern Victoria. They appear to belong to the same race as Sydney examples. Lucas described very similar examples from Gippsland as *H. affinis*. His type pair are in the South Australian Museum (registered No. 1. 14866). They are closely similar to Sydney examples, and it is unlikely they ever could be regarded as belonging to a separate race. If required the name *affinis* is available. It is possible Lucas when he described *H. affinis* did not have any authentically identified specimens of *H. banksii* for comparison; his remark that typical *H. banksii* had ten orange spots on the forewing seems hard to reconcile with any examples of the species.

H. b. banksii flies in February, March and April, being distributed on the Eastern Coast from Manning River, Central New South Wales, southward to Loch, Trafalgar and Wandin in Eastern Victoria. It is everywhere rare near the coast, becoming more common in the Blue Mountains and on the uplands of Eastern Victoria, at elevations of from one to three thousand feet.

HETERONYMPHA BANKSII NEVINA subsp. nov.

Plate xviii, fig. a-b, g; plate xix, fig. g, and text fig. 1.

Male. Wings above black with orange markings, also dull brown markings and suffusions near bases of both wings but not extending to tornus of hindwing; wing patterns generally as in the race *H. b. banksii* but with basal orange areas of hindwing large and separated from distal series only by a relatively narrow zig-zag intervening portion of black ground-colour; tornal

area orange, not uniformly suffused with brown as in other races; a single eyespot on hindwing similar in size to that in *H. b. banksii* but with outer brown ring less developed. Wings below generally as in *H. b. banksii* but apex of forewing with a sub-costal dark brown patch more conspicuously developed; basal half of hindwing of a bright yellowish-orange hue scarcely darker than basal-third of forewing; the outer suffused chocolate areas on hindwing have a rather conspicuous dark patch in the outer third. Wing length 27 mm., expanse 57 mm.

Female. Colour and markings above somewhat as in male but orange spots larger and separated only by narrow black interspaces; basal orange areas of fore- and hindwings very large; a small spot near termen of forewing white, instead of orange, as in male. Forewing beneath with basal areas orange, but distal spots yellow and surrounded with black, except near apex, where there is a chocolate-brown patch, and below it a small white spot. The hindwings have the basal half fawn with fine rich brown markings, the distal half is broadly blotched with the same brown colour, with a more smoky area midway between the eye spots. Wing length 26.5 mm., expanse 56 mm.

Loc. Western Victoria: Mt. Rosea at 1,000 ft. (Holotype, a male, 28th January, 1952, and allotype female, 13th February, 1952, and paratype male, registered No. I, 19089 in South Australian Museum, collected and presented by R. H. Fisher and the author; a paratype pair in the collection of R. H. Fisher). Three males and two females examined.

Members of this race differ from *H. b. banksii* in colour and markings. In particular the basal orange areas of the hindwing above are much larger, encroaching on the dark area separating the basal and distal series of orange spots and reducing it to about one-half the width found in *H. b. banksii*. The darker brown areas of hindwings beneath are much less evident and the basal half is of an orange to yellow colour little darker than on forewing. If only females of the two races had been known they would be considered separate species for the differences between them are marked. Examination of males suggests a closer relationship and they can only be regarded as very distinct races of one species.

The described examples were bred from larvae taken in late November, 1951. The male pupated 30th December, emerged 28th January. The female pupated 20th January, emerged 13th February. The larvae were discovered feeding at night on native tussock grasses (*Poa caespitosa* Forster and *Poa caespitosa* var. *tenera* Benthams) at an elevation of 1,000 ft. Several larvae occurred also at a site at 2,000 ft. elevation in close proximity to larvae of *H. solandri angela* and from these one was reared.

Where present the larvae were not uncommon, it being estimated that like the *H. solandri* larvae referred to in later paragraphs a larva was to be found for each thirty tussocks or so of the foodplants examined. However, the habitat is a very restricted one, the larvae occurring only where the grass is sheltered from direct sun. Even a few yards away, where conditions of less adequate shelter prevail, larvae could not be found. Two larvae may be present on the one grass tuft, unlike *H. penelope*, which seems always to be solitary in its habits.

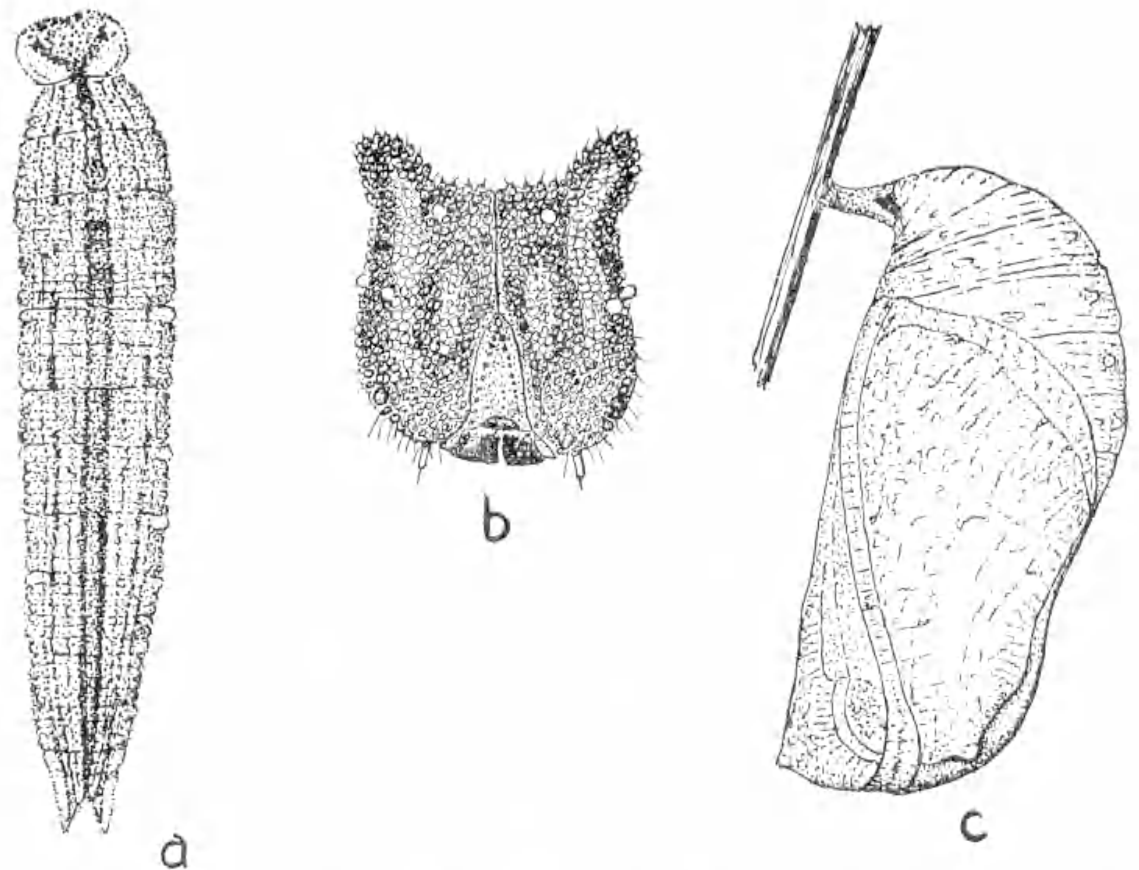


Fig. 1. a-c, *Heteronympha banksii nevina*. Mt. Rosea, 2,000 ft.; a, adult larva, length 25 mm.; b, face, diameter 2.8 mm.; c, pupa, length 12 mm.

Larva. The adult larva (text fig. 1a-b) is 23-25 mm. in length, shagreened, pale buff in colour, with longitudinal striae, the head dark brown with cream stripes. The sides of the abdomen are brown and a dark spot is present on each of the prolegs, the tip of the abdomen is bifurcate. The head, viewed from in front, bears large laterally placed, somewhat rounded projections covered with relatively large pustule-like elevations which extend over much of the face; some are dark brown and others pale cream, forming two stripes on each side of face, also a lateral stripe. There are three pustular elevations on each side, larger than the rest, and pale cream in colour.

Larvae feed after about 9 p.m. When mature they remain dormant for up to nine days resting on a pad of silk; they then suspend themselves, maintaining a flexed position, head down, for from 10 to 28 hours before the pupal ecdysis takes place.

Pupa: Bright grass green or dull purplish-brown suspended by cremaster (text fig. 1c). Length 12 mm., diameter 6 mm. There are four, sometimes five pairs of rounded processes on the abdomen. The pupation period ranged from 20-32 days. On occasion the butterfly emerges from the pupa during the hour of midnight and is then fully developed long before dawn.

HETERONYMPHA BANKSI MARIPOSA subsp. nov.

Plate xviii, fig. e-f, and plate xix, fig. f.

Male. Wings above black with orange markings, a broad pale brown suffusion over basal part of each wing extending to tornus of hindwing; orange markings of forewings as in *H. b. banksii*; basal orange patches of hindwing large but well separated from distal ones; ocellus large with large black inner ring, but outer brown ring less conspicuous than in the above mentioned form. Hindwing below with chocolate-brown markings extending over whole of wing, an opalescent purple sheen very conspicuous over the wing, eyespots both large. Wing length 27 mm., expanse 58 mm.

Female. Wings above black with orange markings and brown basal suffusion similar to the male; sex scales absent from hind margin of cell of forewing and the posterior subapical spot white instead of orange. The eye spot on hindwing above, and both of those present below are large. The chocolate-brown markings extend to base of hindwing but the opalescent sheen appears far paler there. Wing length 26 mm., expanse 56 mm.

Loc. Queensland: McPherson Range (Holotype, a male and allotype female numbered I. 19091 in South Australian Museum) taken March, 1891, by H. Tryon.

H. b. mariposa differs from *H. b. banksii* in the larger eye spots on the wings; the inner black ring is over half as big again as in the corresponding ring on the two more southern forms. Other differences lie in the larger size and greater diffusion of the orange markings.

The examples of this race described were taken by the late H. Tryon and given to R. Hildge, who in 1898 took note of them in a published list of the butterflies of the Brisbane district. They came to the South Australian Museum along with the T. P. Lucas collection. The late Dr. G. A. Waterhouse, to whom they were shown in 1931, mentioned the locality of their taking in his book (1932, p. 97). He had intended to collect specimens of his own and describe

it as the northern race. The finding of the Grampians form affords a convenient opportunity to place it on record.

Possible limiting factors in the distribution of the three races of *H. banksii*, as now recognized, are their seeming requirements of cool, grassed slopes in sheltered humid areas away from the heat of noon-day where the foodplants either are perennially green or at least remain green until January. Our efforts at breeding them show that the larvae as readily succumb to the effects of excessive moisture, as they are intolerant of dry conditions. It is probable that conditions suitable for the species occur at few if any places between the Grampians and Eastern Victoria.

The three races are separable by the following key:

KEY TO RACES OF *HETERONYMPHA BANKSII* (Leach).

- | | | | | |
|--|-------|-------|-------|-----------------|
| 1. Median black band of hindwing above narrow | ..... | ..... | ..... | <i>nevina</i> |
| Median black band of hindwing above wide | ..... | ..... | ..... | 2 |
| 2. Ternal ocellus of hindwing above and below relatively small | ..... | ..... | ..... | <i>banksii</i> |
| Ternal ocellus of hindwing above and below relatively large | ..... | ..... | ..... | <i>mariposa</i> |

HETERONYMPHA SOLANDRI SOLANDRI Waterhouse 1904.

Plate xix, fig. a-b.

Heteronympha solandri Waterhouse 1904, p. 466.

The type male was from Poowong, January, 1893, and the female from Mt. Erica, 4,500 ft., in February, 1903. Both localities are in Eastern Victoria. The race also has been taken on Mt. Hotham, on Mt. St. Bernard at 5,000 ft., on Mt. Donna Buang at 4,000 ft., and I have it also from Tanybryn in the Otway Ranges, taken on 1st February, 1953. New South Wales records are from Mt. Kosciusko and near Jenolan Caves. It flies from late December to March.

In the Grampians its place is taken by a separate race, smaller in size and differently marked. In this western form males have the orange marks generally reduced in size but more interconnected, while the females have the orange areas much extended and in consequence appear far brighter in colour.

HETERONYMPHA SOLANDRI ANGELA subsp. nov.

Plate xviii, fig. b; plate xix, fig. c-d, and text fig. 2.

Male. Wings above black with orange markings, generally as in *H. s. solandri* but reduced in size, some sex scales along posterior margin of cell less conspicuous than in *H. s. solandri*; the sub-marginal orange spots of hindwing

obsolete; a discal series of spots parallel to termen of hindwing forming a continuous band, however, the third spot in the series is only half the width of the others; the background colour appears as a black band dividing these discal spots from the orange basal area; this band is particularly narrow where adjacent to the first and second discal spots; there is an ocellus near anal angle. Wings beneath much as in *H. s. solandri*; hindwings yellow with conspicuous opalescent purple-brown suffusion beyond end of cell. Wing length 23 mm., expanse 50 mm.

Female. Markings generally as in male, but sex scales absent; orange patch near inner margin of forewing large and connected with a basal orange area and the subcostal spot at one-half; there is a conspicuous white spot below apex; the discal spots of hindwing are continuous and the basal orange patch extends almost to inner angle. Forewings below as in male; hindwings dull yellowish-brown with a general iridescent appearance accentuated in a patch beyond end of cell. Wing length 50 mm., expanse 54 mm.

Loc. Western Victoria: Mt. Rosea, 2,000 ft. (Holotype, a male and allotype female, 25th December, 1951, collected and presented by R. H. Fisher and N. B. Tindale, numbered 1, 19090 in South Australian Museum; a paratype pair 2nd and 14th January, 1952, in collection of R. H. Fisher). Two males and two females examined.

In typical *H. s. solandri* the discal series or orange spots on hindwings is broken, whereas in both sexes of the western race the spots form a continuous series only divided, in the males, by faint black lines at the veins, and in the females appearing as a solid band. The Grampians race appears to be smaller than the Eastern Mountain one.

The paratype male is similar to the type but slightly smaller; a paratype female has the orange markings rather larger and even more conspicuously connected together than in the described female specimen. The given name was suggested to me by Mr. Fisher.

An example of the larva of this interesting form was first encountered on 10th November, 1950, on Mt. Rosea at 2,000 ft., it pupated 30th December but the author failed to rear it. Additional larvae, some about to pupate, were taken in the same area the following year. They were feeding, late at night, on sheltered clumps of the tussock grass, *Poa caespitosa* Forster, and occasionally also on clumps of the tenuous form of the same species, which is found in some places.

Like those of *H. b. nevina* the larvae seem intolerant both of dry sunny conditions and excessive humidity, so that their larval habitat is very restricted.

Larva. Similar to that of *H. banksii nevina* in colour and markings, but viewed from above the dark markings on the back of the head form a conspicuous

triangle and the texture of the body surface is finer (Text fig. 2a). There is generally a pink flush over the anterior part of the body and some traces of a transverse pink tone running around the middle of each body segment. The head (Text fig. 2b) bears small lateral rounded projections. The surface, in common with the face and sides, is covered with tiny elevations, generally each bearing traces of a hair. Viewed from the front the head is finely shagreened, brown with two ill-defined paler patches. The adult larva is 23-25 mm. in

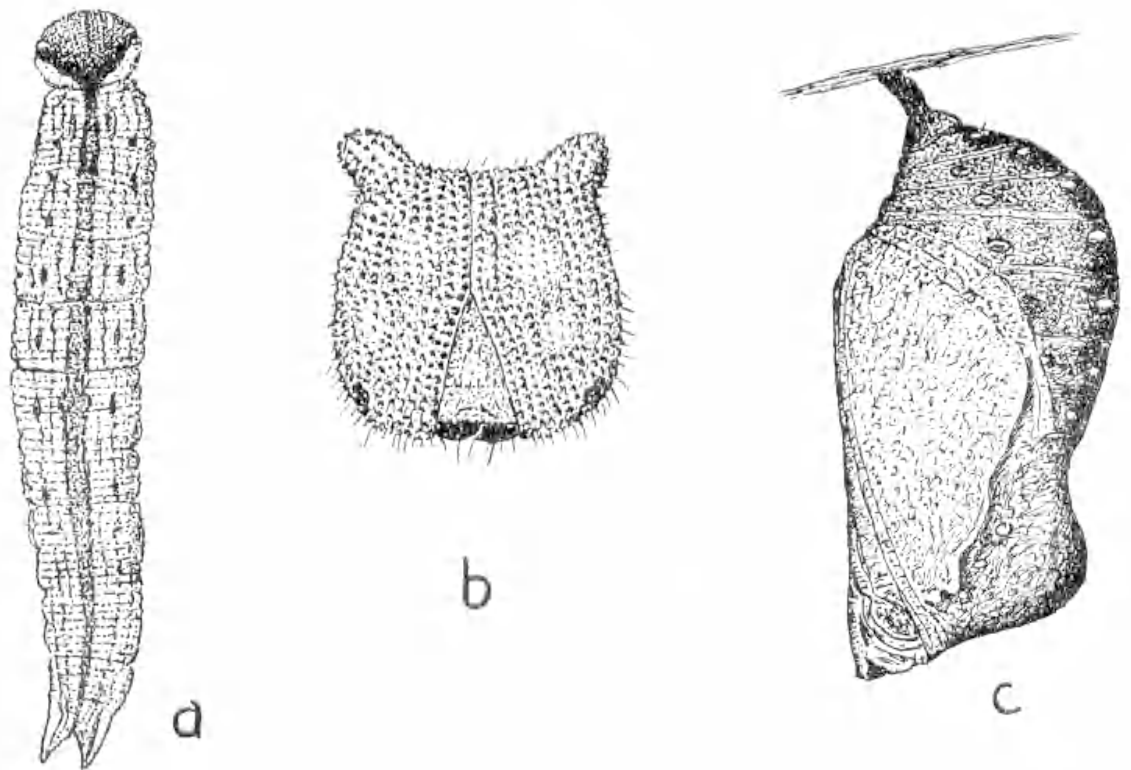


Fig. 2. a-c, *Heteronympha solandri angela*. Mt. Rosea, 2,000 ft.; a, adult larva, length 21 mm.; b, face, diameter 2.8 mm.; c, pupa of female, length 14 mm.

length. It may be distinguished from that of *H. b. nevina* by the less defined lateral projections on head, the finer shagreening, and the absence of the specialized pustular elevations present on the head in that species.

Pupa. Green, grayish-green, or as in the example figured, dark brown, almost black, with paler brown wing cases and head; there are seven rounded tubercles on each side of abdomen, each with the summit cream in colour. Length 14 mm., diameter 6 mm. The pupa drawn (Text fig. 2c), when its specific identification was checked by a partial dissection, proved to be a female. The pupal period is about 21 days.

HETERONYMPHA PENELOPE MARAIA Tindale 1952.

Further series confirm the appearance of this Grampians form as reported in an earlier paper (Tindale, 1952). In one female specimen a black bar breaks the normally linked orange patches across the forewing above but in all other characters it is like others of this race. Mr. J. Womersley has since taken a small form at Snuggery in March, 1952, thus extending the range of the species into the South-East of South Australia.

Further observations were made in the 1951-52 season on the life history of the species in the Grampians. The larvae are to be found feeding at night chiefly on large tussocks of the grass *Poa caespitosa* Forster. They were found at several places between Hall Gap and Mt. Rosea, at altitudes of from 750 to 1,000 feet. They occurred also, less commonly, on *Danthonia pilosa* R. Brown and one larva was taken on *Themeda australis* R. Brown. Nowhere common, rough counts were made indicating the finding of only one larva to each 100 tussocks of grass searched. The larvae are solitary, in no instance were two taken even on adjacent clumps. There is a prepupal resting stage of more than a week in which the larva stays among damp grass and leaves; no attempt is made by the larva to attach itself to any support and the pupa lies loose among debris held together with a few strands of silk on the ground. All the pupae seen were pale brown; a few had dark spots on the wing cases and leg sheaths. The adult emerges with a sudden and very complete rupturing of its pupal skin and is most vigorous and active while seeking a place where it may rest and expand its wings. On more than one occasion such emergences have taken place at night; one at 9 p.m. and another between midnight and dawn. Pupation periods in four different examples were 37, 41, 47 and 60 days.

HETERONYMPHA CORDACE WILSONI Burns 1947.

A large newly emerged male taken at Dartmoor, Western Victoria, 18th November, 1950, is the earliest seasonal record for the species.

A series of five freshly emerged males were taken in a swamp thicket overgrown with scented Honey-Myrtle (*Melaleuca squarrosa* Donn) on Button Grass (*Mesomelaena sphaerocephalus* R. Brown) flats of the Wannon River headwaters at 1,400 ft., on 26th and 27th December, 1952. They were alighting on and flying about sedges (*Carex fascicularis*) overgrown with a rare species of grass (*Tetrarrhena acuminata* R. Brown) not previously recorded from Western Victoria.

These are the first examples of the butterfly from the Grampians. They seem generally to be a little larger than ones taken at the type locality near

Dartmoor, on the Lower Glenelg River, otherwise they are not to be distinguished. It is possible that *Tetrarrhena* is the foodplant of *H. cordace*, since a Satyrid larva was taken on a *Tetrarrhena* grass similar to it, at Dartmoor, in November, 1950, but was not reared.

PSEUDALMENUS CHLORINDA (Blanchard) 1848.

Thecla chlorinda Blanchard 1848, pl. 3, fig. 15-18, and 1853, p. 401.

Four races previously have been described.

Pseudalmenus chlorinda barringtonensis Waterhouse 1928. Originally known only from a single male found dead on snow in October near Edwards Hut, on Barrington Tops, New South Wales; others were obtained by Messrs. Frank Dodd and A. Burns at Tubrabucca, New South Wales, in September, 1947.

Pseudalmenus c. chloris Waterhouse and Lyell 1914. New South Wales. Only known so far from Katoomba in October and Mittagong in November.

Pseudalmenus c. zephyrus Waterhouse and Lyell 1914. Eastern Victoria, Gippsland and Dandenong Ranges. Single-brooded, appearing in September, October and early November (Plate xx, fig. e-f).

Pseudalmenus c. chlorinda (Blanchard 1848). Tasmania, found usually at low elevations; very local. Single-brooded, appearing from August to November (Plate xx, fig. d). There are important notes about this race in a paper by Couchman (1948).

To these may be added a fifth race from the Grampians.

PSEUDALMENUS CHLORINDA FISHERI subsp. nov.

Plate xx, fig. a-e and text fig. 3.

Male. Forewings above brownish-black with a black spot at end of cell enclosed on three sides by a pale orange oval patch, broken into five contiguous spots by fine black lines following the veins, termen finely fringed white. Hindwings brownish-black with a small orange mark near cell outwardly from a rather darker black spot, an orange band running parallel to termen, tapering evenly towards and disappearing before apex, this partly encloses two small black spots; fringes conspicuously white, dorsum broadly suffused with white scales. Forewings beneath pale stone grey with a relatively large black discoidal spot and a more distal band; the termen narrowly margined with black. Hindwings also pale stone grey with wide orange terminal band and a series of

rather large black spots, the apical three marginal, the more posterior ones enclosed within the orange band; a black spot at tornus separated from another by the tornal portion of the orange band; a band composed of three black spots across cell. Wing length 14.5 mm.: expanse 31 mm.

Female. Forewing with orange area similar to male, with black spot of cell almost surrounded by orange. Hindwings with pale orange cell spot very large; submarginal deep orange band wide and with margins intensely black; the two black spots within it well indicated. Forewings beneath as in male; rather dull grey in colour with traces of lighter scales in position corresponding to markings above; hindwings dull grey with black markings not very evident, and reddish ones, rather diffused, extending well in from the black ones. Wing length 14.5 mm., expanse 32 mm.

Loc. Western Victoria: Mt. Victory, Grampians, 1,200 ft. (Holotype, a male, January, 1952, and allotype female, 13th September, 1952, numbered L. 19092, and a paratype male, in the South Australian Museum, collected by R. H. Fisher and the writer; a paratype pair are in the collection of R. H. Fisher). Three males, two females have been examined.

As indicated in the accompanying key, the present race differs from the others in extent of orange markings on wings above and in the distribution and relative sizes of the markings on the wings below.

From *P. c. zephyrus* it differs below in the greater development of black spots within the orange marginal band of hindwing; from *P. c. chlorinda* it differs in the absence of a second black band in the cell of hindwing.

The paratype male in the series placed in the S.A. Museum has the normally pale orange marks of the wings above almost white; in other respects it is like the other two examples.

Mr. J. C. LeSouef took one example on Mt. Rosea at 2,300 ft. in November, 1941. He realized it was a distinctive form but the specimen was lost and no further specimens have been taken at the place where he found it. On 30th November, 1951, numerous larvae were found feeding on blackwood (*Acacia melanoxylon*) shrubs near Mt. Victory. They were attended by small sweet-smelling black ants.

When disturbed the ants shepherded larvae together in clusters of up to a dozen and more, usually near a fork, and stood over them.

Eggs and larvae in all stages were present. The larvae fed readily on blackwood tips and were reared to maturity. Ants continued to minister to them until they pupated, in December. Further adult larvae and pupae were taken at the same place on 28th December, 1951. The pupae were generally

to be found hidden in crevices in bark and seemed not to be of interest to the ants.

Three male examples emerged in early January from pupae of this brood. The pupal period was about 22 days. The January emergences suggest that under some conditions there may be either a complete or a partial second or summer brood of this race. The greater proportion of the brood remained in the pupal state over the winter. Females emerged on the 13th and 14th September.

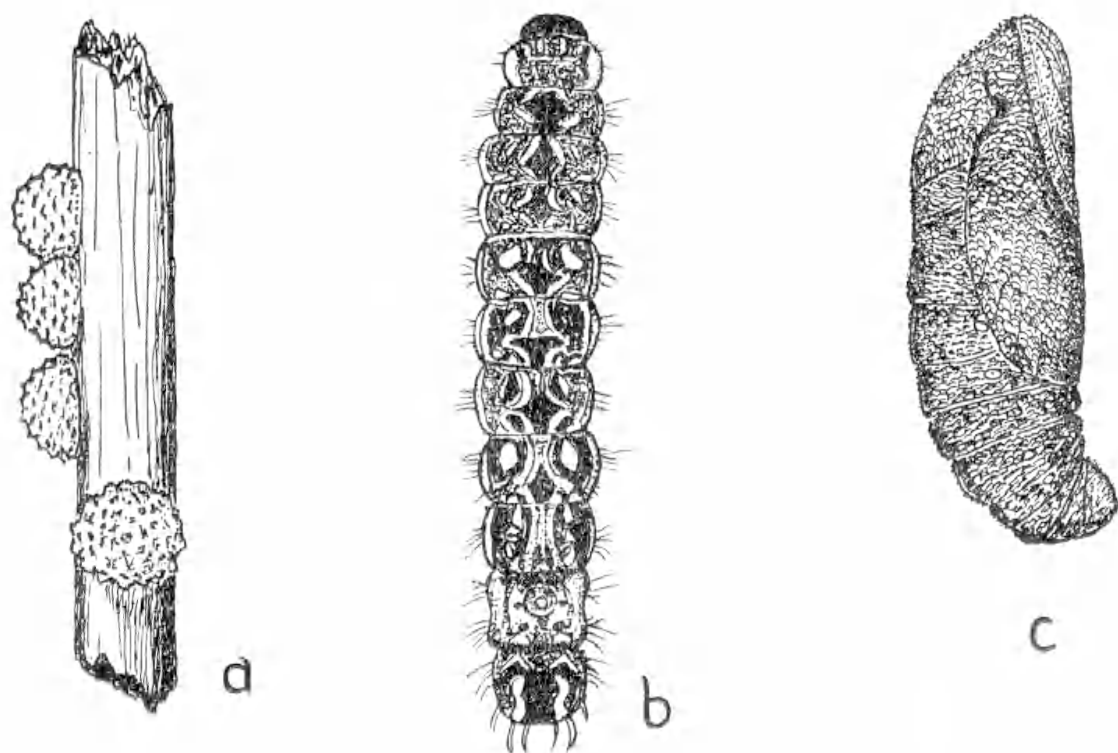


Fig. 3. a-c, *Pseudalmenus chlorinda fisheri*. Mt. Victory, 1,200 ft.; a, eggs, diameter 0.8 mm.; b, adult larva, length 19 mm.; c, pupa, length 10 mm.

The eggs are laid, up to four at a time, on tender tips of saplings and small trees. They are 0.8 mm. in diameter, greenish-white, hemispherical and pitted with coarse punctures set in spirals about the egg (Text fig. 3a).

Larvae which emerge from these eggs are 3.5 mm. in length. They complete their larval life in 28 to 33 days. There seem to be five larva instars. The adult larva (Text fig. 3b) is 18-21 mm. in length, rather cylindrical with similar diameter from prothorax to last segment of abdomen. The head is black, carried partly concealed beneath the prothorax, the body above is marked with numerous greenish-grey bands and lines together with spots of greenish-cream;

paired cream spots of larger size are present on second and fifth abdominal segments, the seventh abdominal segment has a pink suffusion. In lateral view a pink band extends from posterior margin of prothorax to the sixth abdominal segment, ventral to this band is a grey one, below it there is a narrow lighter band having white lateral hairs; the under parts are pale green.

Pupa. Brownish-black, rounded, compact, covered with fine ridges and eminences which give it a matt appearance (Text fig. 3e). It is supported by a median girdle and by a cremaster. Length 10 mm., width 4 mm.

The adult larva appears to differ from that of *P. c. barringtonensis* in the disposition of the markings, the large creamy-yellow spots usually being absent, except for ones on the second and fifth abdominal segments.

The five races of *P. chlorinda* may readily be distinguished as follows:

KEY TO RACES OF *PSEUDALMENUS CHLORINDA* (Blanchard).

- | | | | | | |
|--|-------|-------|-------|-------|------------------------|
| 1. Cell of hindwing above with orange spot | ..... | ..... | ..... | ..... | 2 |
| Cell of hindwing above without orange spot | ..... | ..... | ..... | ..... | 5 |
| 2. Cell spot of hindwing not joined to terminal orange band | ..... | ..... | ..... | ..... | 3 |
| Cell spot joined to terminal orange band | ..... | ..... | ..... | ..... | <i>barringtonensis</i> |
| 3. Central orange spot of forewing large and surrounding a black internal spot | ..... | ..... | ..... | ..... | <i>chloris</i> |
| Central orange spot of forewing smaller, not surrounding the black internal spot | ..... | ..... | ..... | ..... | 4 |
| 4. Orange cell spot of hindwing above relatively large | ..... | ..... | ..... | ..... | <i>zephyrus</i> |
| Orange cell spot of hindwing above relatively small (or obsolete) | ..... | ..... | ..... | ..... | <i>fisheri</i> |
| 5. Hindwing below with only one series of cell spots | ..... | ..... | ..... | ..... | <i>fisheri</i> |
| Hindwing below with two series of cell spots (sometimes without orange) | ..... | ..... | ..... | ..... | <i>chlorinda</i> |

HESPERILLA CRYPSARGYRA (Meyrick) 1888.

Telesia crypsargyra Meyrick (1887) 1888, p. 829.

Hesperilla c. crypsargyra Waterhouse 1927, p. 281.

Two races of *H. crypsargyra* previously were known.

Hesperilla c. hopsoni Waterhouse 1927, is from New South Wales at Barrington Tops and Deervale, near Dorrigo, flying in January and February. The sexes are figured here (Plate xxi, fig. i-l) for comparison with a new form.

Hesperilla c. crypsargyra (Meyrick) 1888. New South Wales, from the Blue Mountains, near Blackheath and Katoomba, above 2,000 ft., where locally it is common from about 21st November until early February (Plate xxi, fig. c-h).

The following new form has been taken in the Grampians.

HESPERILLA CRYPARGYRA LESOUEFI subsp. nov.

Plate xxi, fig. a-d, m-n, and text fig. 4a-4b.

Male. Forewings brownish-black with traces of lighter greenish-toned hairy scales on basal fourth; three sets of spots silvery-white; an oblique black sex mark from beyond end of cell to dorsum; hindwing brownish-black with an orange yellow band. Forewings beneath dull black tending to brown towards apex, with markings similar to those of upper side, but larger and pale yellow in colour; also a pale lemon-yellow series of four spots near apex; hindwing rich brown with three large silvery-white spots arranged across wing and another series of smaller ones parallel to margin; fringes alternately black and very pale yellow. Wing length 12 mm., expanse 27 mm.

Female. Similar to male but with more rounded wings and heavier body. The silvery-white markings of forewings are larger and there is an additional spot present near the posterior margin; the sex band is absent; hindwings with markings similar to those of male; the median orange yellow band broad; fringes conspicuously pale yellow and black, the yellow tone being generally darker than in male. Wings beneath as in male. Wing length 14 mm., expanse 31 mm.

Loc. Western Victoria: Mt. William 2,000-3,000 ft., locally common. (Holotype a male, numbered I. 19093 in South Australian Museum, 5th December, 1950, collected and presented by N. B. Tindale. Allotype female, 29th November, 1950, collected by J. C. LeSouef and deposited in the South Australian Museum. Paratypes are in the collections of J. C. LeSouef, F. Erasmus Wilson, R. H. Fisher and the South Australian Museum. The figured specimens are a paratype pair from the collection of F. E. Wilson; they were taken by B. B. (given). Thirty males and thirteen females have been examined.

In one aberrant male the white spots normally present beside the sex mark are lacking and in three others there is only one instead of two. Rarely, in the male, there are traces of one or two spots near the posterior margin in the position of the conspicuous spots present in the female.

H. c. lesouefi differs from typical *H. c. crypsargyra* in colour, markings, and size. The wing colour above is darker and the forewing markings are silvery-white, not pale yellow. The hindwing band is a clear orange-yellow, somewhat wider, and less interrupted at the veins than in most specimens of the typical form. Allowing for the freshness of the specimens the forewings beneath are of a far darker background colour and the silvery-white spots of the hindwing are relatively large. The small male wing expanse, ranging from 26-29 mm.

contrasts with the 32 mm. usual in Blackheath and Katoomba males of the originally named form; females also are smaller than in the two eastern races.

H. c. hopsoni is even more distinct from this new race by reason of its larger size, the deep orange-coloured marks of the forewings beneath, and the brighter brown colour of the hindwings. Examples of this new race were first taken on 13th November, 1950, in the pupal state, also as larvae, on clumps of a swordgrass (*Gahnia microstachya* Bentham). This swordgrass was growing on steep, south-facing rock walls and slopes of the Mt. William massif up to altitudes of about 3,000 ft.

At somewhat lower elevations down to 2,000 ft. larvae of the probable second and third instars were found. Between 25 and 30 clumps have to be examined for each larva found. The foodplant on Mt. William extends downwards commonly to about 1,800 ft., below which it is found only as an uncommon plant to its limit at 1,500 ft., occurring there on damp sandy slopes of Cathedral Rock among *Acacia* thickets and tea tree scrub. So far as is known the foodplant does not occur elsewhere in the Grampians and its presence seemingly has escaped scientific notice till now.

The first adult specimen of the butterfly, a male expanding 27 mm., emerged on 25th November; another of similar size and markings on 5th December, 1950. J. LeSouef reared two males and a female in the last week of November, and B. Given took specimens on the wing, and as pupae, between 13th and 19th December. Other examples were reared and taken on the wing in December, 1951. The latest emergence date is 2nd January; males seem far more abundant than females.

Life history. Egg not examined.

Young larvae, perhaps of the second or third instar, are 10 mm. in length, pale green, with traces of longitudinal markings; the head, 1.8-1.9 mm. in diameter, is pale brown with a faint median longitudinal darker brown stripe.

Larvae of a later instar (Text fig. 4a and Plate xxi, fig. m), length 14 mm., are pale olive-green, with faint traces of longitudinal brown markings, a narrow darker midline and paler brown lateral stripe. The head is 2.1-2.4 mm. in diameter, yellow with a broad black median facial band, widened anteriorly, where it is divided; viewed from above the margins of the head appear as if rimmed narrowly with brown but in the larval head-casts this is not as evident.

Adult larval shelters usually are made by drawing three leaves together in an upright position; pupation is in the open tube so formed; the third leaf often has a loop in it which seems to serve as a spring and keeps the shelter in position; there usually is a white meal over the anterior end of the pupa. The pupa (Text fig. 4b and Plate xxi, fig. n) is 18 mm. in length, smooth pale green,

with still paler wing cases, which become yellow and then brownish-black as the pupa matures, a prominent pair of horns is present on the head. The pupation period is about 21 days. Breeding sites preferred are on *Gahnia microstachya* in open patches among the Grampian Mountain gums, but some larvae and pupae were found on tussocks in dense under-brush.

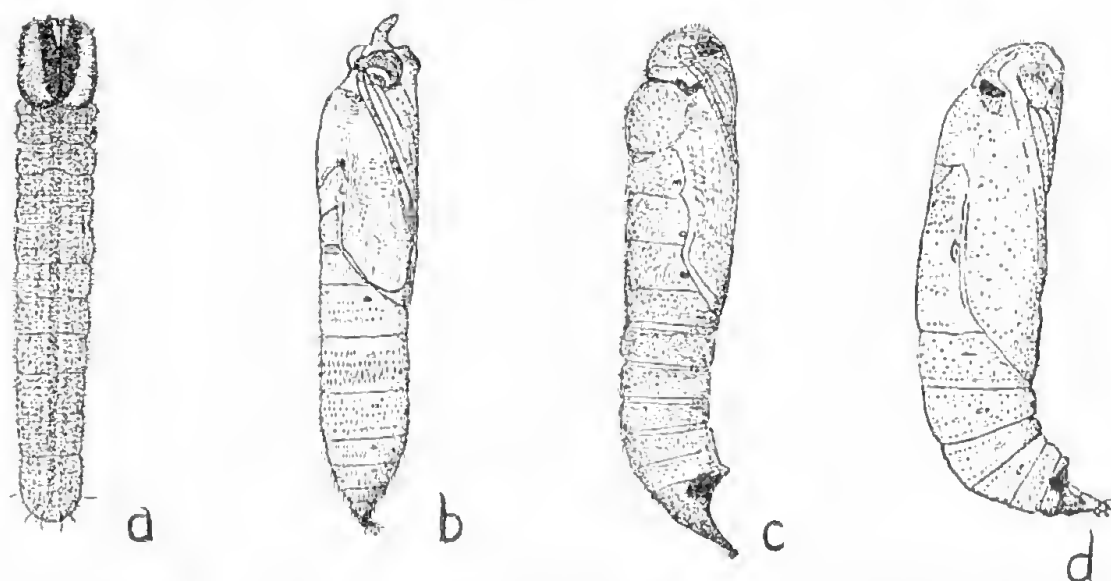


Fig. 4. 4a-b, *Hesperilla crypsargyra lesouefi*, Mt. William; a, subadult larva, length 14 mm.; b, pupa, length 18 mm. 4c, *Signeta flammeata*, Mt. Rosea; pupa, length 15 mm. 4d, *Dispar compacta*, Mt. Rosea, 1,000 ft.; male pupa, length 12 mm.

The finding of such a distinctive member of the *H. crypsargyra* group in Western Victoria suggests that with the further examination of the Eastern Victorian highlands a form of the species also should be found there. In the light of the subspecific differentiation shown by other Grampians butterflies, when compared with Eastern Victorian races, it seems possible that, if such a find is made, the form taken in Eastern Victoria will be closer to *H. c. crypsargyra* than to the Western race, *H. c. lesouefi*.

SIGNETA FLAMMEATA (Butler 1882)

Text fig. 4c.

On 10th November, 1950, a larva approximately 10 mm. in length was taken in a tussock of soft grass (*Poa caespitosa* Forster) at Mt. Rosea, by searching about 11 p.m. with a lamp. On 31st December the adult larva was 15 mm. in length, pale brown with a darker mid-dorsal line; the head brownish-black, large and with prominent eyes. The larva gathered dry grass together to form a loose shelter within which it pupated on 2nd January; the pupa was attached to the grass by a few strands of silk about the tip of abdomen. The pupa

(Text fig. 4c) is 15 mm. in length, rather cylindrical, with the head somewhat squarely truncate, brown in colour with the eyes mottled with dark brown; the last segments of the abdomen seem to possess an enlarged circular gland or specially pigmented area. On 17th January the pupa darkened. It emerged 19th January, 1951, and the butterfly was fully developed by 8 a.m. Mr. R. H. Fisher took a male specimen on the wing at Hall Gap, 29th January, 1951. In November, 1951, further larvae were taken by R. Fisher; these also emerged in January. All proved to be males.

So far as can be ascertained these are the first records of the species in Western Victoria.

It is known to occur at Killarney in Southern Queensland, at Barrington Tops, Dorriggo, Sydney, Illawarra, the Blue Mountains, and Colo Vale, in New South Wales, and in Victoria at Mt. St. Bernard, Wandin, Healesville, Gisborne, Kallista and Lorne. On 1st February, 1953, I took it at Tanybryn in the Southern Otway Range. It ranges from near sea level to about 4,000 ft.

Variations which might be considered of subspecific value have not been recognized although some examples are very dark in colour. Further study may show that the separation is warranted of the northern examples from Dorriggo and Killarney. Butler's type came from the vicinity of Melbourne.

Eastern Victorian specimens from Kallista are large, and while somewhat darker than specimens from Northern New South Wales, are not quite as dark as examples from Mt. Rosea. Mt. St. Bernard examples agree with those from Kallista except that they are a little lighter in colour. A typical freshly emerged male from Kallista expands 36 mm., and has the hindwing beneath dark ochreous, while the ochreous suffusion above is conspicuous.

DISPAR COMPACTA Butler 1882.

Text fig. 4d.

Mr. B. Given took a male of this species at Dartmoor on 31st January, 1951. It seems not previously to have been known from Western Victoria.

Larvae were taken at Mt. Rosea (1,000 ft.) in November, 1951, feeding on the grass *Poa caespitosa* Forster and also on *P. caespitosa* var. *tenera* Ben-
tham. They can be found near midnight on the fine flower stems. These may bend over with the weight of the larva.

The larva is of the palest green with a dark head. On 3rd December three examples measured 14, 16 and 16 mm. in length when fully extended, but only 9, 10 and 11 in a contracted position such as they assume when disturbed. The largest larva pupated just prior to 26th December in a tube shelter formed by joining the two edges of a leaf with a series of equally spaced silken straps;

it emerged on 20th January, 1952. Two other larvae continued to feed until 7th January. They formed shelters by joining the edges of spills of paper in a similar manner to the leaf used by the earlier one, and pupated between 8th and 12th January. The two last named showed little signs of development on 27th January; they darkened shortly after this date and one emerged on 7th February.

Pupa pale fawn, smooth, covered with an opalescent white meal. The head is rounded, with a large black process at base of forewing. There is another large dark chestnut coloured lateral impression near the apex of abdomen; the abdominal extremity in ventral view is expanded, fan-like strongly chitinized and with a fringe of hairs. The pupa (Text fig. 4d) is similar to that of *Signeta flammata*. With development the pupal wing cases darken. The pupal period ranges from 24 to 28 days.

The adults do not seem to differ from those taken in Eastern Victoria.

LIST OF SPECIES FROM GRAMPIAN MOUNTAINS, WESTERN VICTORIA AND VICINITY.

Delias aganippe (Donovan, 1805). Mt. William, 27th December; Wannon Falls.

Anaphaeis java teutonia (Fabricius, 1775). Hall Gap; Mt. Rosea.

Pieris rapae (Linnaeus, 1758). Hall Gap.

Danaus menippe menippe (Huebner, 1816). Hall Gap. The studies of Talbot (1943), Corbet (1949), and Field and others (1951) indicate *menippe* to be the proper name of this North American visitor. The formerly used name *plexippus* Linnaeus applies to a Chinese species, displacing the name *genutia* Cramer. The lectotype of *D. plexippus*, nominated by Corbet (1949) is one of the Chinese examples studied by Linnaeus, still bearing his name label.

Vanessa cardui kershawi (McCoy, 1868). Mt. William. The name *Vanessa* takes precedence over *Pyrameis* by reason of Opinion 156 of the International Commission on Zoological Nomenclature.

Vanessa itea (Fabricius, 1775). Mt. Rosea.

Heteronympha banksii nevina Tindale, 1953. Mt. Rosea, 1000-2,000 ft.

Heteronympha solandri angela Tindale, 1953. Mt. Rosea, 2,000 ft.

Heteronympha merope merope Fabricius, 1775. Wannon Falls; Myrtlebank; Hall Gap.

Heteronympha penelope maraia Tindale, 1952. Myrtlebank, 800 ft.; Mt. Rosea, 1,000 ft.

- Heteronympha cordace wilsoni* Burns, 1947. Dartmoor, 18th November, 1951; Wannon River Headwaters, 1,400 ft., 26-27th December, 1951.
- Geitoneura klugii klugii* (Guerin, 1830). Hall Gap.
- Tisiphone abeona anloni* Tindale, 1948. Wannon River Headwaters, Moora, and Dartmoor, as larvae on *Galunia psittacorum*; newly emerged female, Dartmoor, 19th December, 1951. Examples of *T. abeona* taken at Yaughar, Otway Ranges, 23rd December, 1951, are all *T. a. albifascia* Waterhouse, 1904.
- Oreixenica kershawi kanunda* Tindale, 1949. Dartmoor, 31st January, 1951. A newly emerged male of *O. kershawi* taken at Turton Pass, Otway Ranges, 23rd December, 1951, appears to belong to the form *O. k. kershawi* Miskin, 1876, as also long series from Lavers Hill and Tanybryn, also in the Otway Ranges, 31st January to 1st February, 1953.
- Candalides acasta* Cox, 1873. Little Desert, 1st December.
- Candalides hyacinthina simplex* Tepper, 1882. Brimbaga, South Australia; a pair of the species from Yaughar, Otway Ranges, taken 23rd December are of the race *C. h. hyacinthina* Semper, 1878.
- Hypochrysops ignita ignita* (Leach, 1814). Kiata, 1st December.
- Zizeeria labradus labradus* (Godart, 1824). Myrtlebank.
- Paralucia aenea lucida* Crosby, 1951. Kiata.
- Neolucia serpentata* Herrich-Schaeffer, 1869. Little Desert and Kiata, 1st December.
- Neolucia agricola agricola* Westwood. Mt. William, 3,800 ft., 27th December; Pomonal, 11th and 28th November; Little Desert, 1st December, worn male.
- Lampides boeticus* Linnaeus. Taratap Station, South Australia; Hamilton, Victoria.
- ? *Ogyris olane* Hewitson. A larva on *Loranthus pendulus* at Tyrendarra, Victoria; it was not reared.
- Ogyris idmo halmaturia* Tepper, 1890. Brimbaga, South Australia, 23rd November and 2nd December, 1951.
- Ogyris hewitsoni meridionalis* Bethune-Baker 1905. At Bellfield; several pupae were taken under bark of *Acacia melanoxylon* near *Loranthus linophyllus*; of these one reared by R. Fisher proved to be an example of the aberration *hopensis* Burns, 1947, which is not a separate race since it occurs as an occasional variant in more than one place where *O. h. meridionalis* occurs.

The race *O. h. parsonsi* Angel 1951 described from Central Australia is a distinctive form of the same species. Some previous authors have been in error in associating the name *meridionalis* with *Ogyris amaryllis*. The last named is a separate species, with several races, found from South Queensland to South Australia, principally along the coast and inland near Canberra.

Ialmenus icilius Hewitson, 1865. Kiata, December.

Pseudalmenus chlorinda fisheri Tindale, 1953. Mt. Victory. Eggs, larvae and pupae on *Acacia melanoxylon* November and December; adults, January, September.

Trapezites eliena monocycla Lower, 1911. Myrtlebank, a reared example, 18th December, pupal duration 16 days; Snuggery, South-East of S. Australia, 30th January, 1953.

Trapezites sciron cremicola Burns, 1947. Little Desert, a worn example, 1st December, 1951.

Trapezites phigalioides Waterhouse, 1903. Pomonal, 11th November; Myrtlebank; Mt. Rosea, 2,000 ft., 15th November.

Trapezites phigalia phigalia Hewitson, 1868. Pomonal, 11th November.

Signeta flammeata Butler, 1882. Mt. Rosea.

Dispar compacta Butler, 1882. Dartmoor, 31st January; larvae at Mt. Rosea, 1,000 ft., emerged January.

Hesperilla chaostola chares Waterhouse, 1933. Jimmy Creek, a worn female taken by R. Fisher on 26th November.

Hesperilla donnyssa delos Waterhouse, 1941. All examples taken in the Grampians area are of this race. Myrtlebank, 24th and 27th November; Jimmy Creek, 3rd December; Wannon Falls, 19th and 23rd November, 2nd December; Cavendish, 23rd November, 3rd December; Victoria Valley, 22nd November. All larvae and pupae seen were on *Gahnia radula*. The identification of the *Gahnia* has been confirmed by the National Herbarium, Melbourne.

Hesperilla chrysolricha leucosia Waterhouse, 1938. Dartmoor, 27th November, reared from pupae on *Gahnia trifida*; closer to this race than to the eastern Victorian *H. e. cyclospila* Lower.

Hesperilla idothea clara Waterhouse 1932. Mt. Rosea, Mt. Victory, and Mt. William; larvae on *Gahnia psittacorum*, 1,400-2,500 ft., males flying about summits in December. Both sexes also from Snuggery, S. Australia, 30th January, 1953.

Hesperilla crypsargyra lesouefi Tindale, 1953. Mt. William, 2,000-3,000 ft., on wing December, as larvae and pupae, November, on *Gahnia microstachya*.
Oreisplanus perornatus Kirby, 1893. Wannon Headwaters, 1,400 ft.; Lake Wartook; Mt. Victory, 2,000 ft. Larvae and pupae November; on wing late November.

DISCUSSION ON CLIMATE.

Progress of speciation in the Grampians area seems to have led to the formation of distinctive races in several species which require relatively high humidity in their environment. Among those previously reported were:

Tisiphone abeona antoni Tindale; *Heteronympha cordace wilsoni* Burns; *Heteronympha penelope maraia* Tindale; *Oreixenica kershawi kanunda* Tindale.

To this suite are now added two further Satyrids, a form of *Heteronympha solandri* Waterhouse and another of *H. banksii* Leach, a race of *Pseudalmenus chlorinda*, as well as *Hesperilla crypsargyra lesouefi* Tindale, member of a peculiarly southern Australian group of Temperate Zone Hesperiid.

The last named seems to require an environment such as is now restricted on Mt. William in Western Victoria to a belt extending from about 2,000 ft., up to the upper limit of the growth of its foodplant *Gahnia microstachya*, at about 3,000 ft. The rainfall of this area is stated to be in the vicinity of 46 inches per annum, distributed rather uniformly over the year. *H. c. lesouefi* seems to have maintained its isolated existence in Grampians area during a time sufficiently long to have diverged from forms existing further to the east. It shows well-marked subspecific differences.

The two other known survival areas for this species are in the Eastern highlands of New South Wales. The three known forms live in areas now separated from each other by belts of drier country respectively 350 and 250 miles in width where today conditions seemingly are not suitable for their existence.

Any drastic past degeneration of climate in Southern Australia probably would have caused *H. c. lesouefi* to have become locally extinct since in such an event there is no area where either it could have sought asylum, or have found its climatic needs.

Hence within the limits of time which must be allowed for the development of a distinctive subspecies of this kind, there probably has not been, in the Grampians area, any drastically arid climatic cycle.

On the contrary, the dispersal of the parent form of what are now the three known races of *H. crypsargyra*, confined respectively to (1) Barrington Tops,

(2) the Blue Mountains and (3) the Grampians, must have been affected in some period when there prevailed a cooler and wetter condition than now exists. What is at present the climate of areas situated at about 2,000-3,000 ft. elevation must then have prevailed far more generally either on the lowlands or the lesser highlands between these areas.

Another Hesperiid which shows the same type of distribution is *Trapezites aliena*, of which the Western Victorian race, *T. c. monacycla* Lower, described many years ago, is different from the Eastern form.

To South Australians the Lepidopterous fauna of the Grampians is thus of particular interest since it preserves elements of the relatively cool-wet-climate loving section of the South Australian fauna in so far as it is distinct from that of South-Eastern Australia. Some Grampians subspecies extend also to the Mt. Lofty Ranges, Kangaroo Island, Port Lincoln, and the southern Flinders Ranges, others extend only to the Mt. Lofty highlands, yet others range only into wet places in the South-East of South Australia and still others, being truly high humidity-requiring forms, survive only in the Grampians area itself, a few even being confined to specific valleys and peaks within the Grampians area.

It is of some interest to note that due to the limited number and situation of rainfall observation stations available in Western Victoria the presence of the Grampians massif, with its rainfall of over 40 inches, is not recognized on generalized climate maps such as that of Thornwaite, as elaborated by Gentilli (1948). It actually is a more extensive area of relatively high rainfall than the Mt. Lofty one and should seemingly fall into the classification as B B'r (humid, warm, rainy) with an aura of B B's (humid, warm, summer dry) around it. The highest Grampians summit plateaux are subalpine in character. Wood (1949), in his Vegetation Map of Australia, gives no indication of the presence of the small areas of wet sclerophyll forest and incidentally also fails to show the outliers of rain forest and *Nothofagus* of the Otway Range, significant though these are from the point of view of plant distribution.

It seems evident from the study of the Lepidoptera that there is a significant faunal break between the Grampians and the mountain areas of Eastern Victoria. The Grampians fauna extends westward into the lower South-East of South Australia and to the Mt. Lofty Range itself, which must be regarded as a recently isolated outlier since recognizable subspecific differences seem not yet to have arisen between butterflies common to the Grampians and Mt. Lofty areas. At no very distant date in the past they probably were more closely linked than today: at that time the climate of the more humid highland areas must then have been present in the low country between them.

The Otway Range fauna is different to that of the Grampians, favouring more a relationship with the Eastern Victorian mountain areas. Hence it is probable that what is now the fauna of the wet Otway Ranges at 1,000-1,800 ft., was formerly that of a moist lowland belt continuous with that of Gippsland when it was a little cooler than now. Examples suggesting this are *Tisiphona a. albifascia*, which occurs in the Otways, not *T. a. antoni*; also *Oreixenica k. kershawi* and not the form *O. k. kanunda*. The broad belt of savannah land between the Otways and Grampians effectively divided these two areas even during the suggested cooler, more humid interval.

The button grass incidentally referred to in recording the capture of *H. corduce wilsoni* on the swamp flats at the headwaters of the Wannon River is the same species (*Mesomeluena sphaerocephalus* R. Brown) as is found in Western Tasmania on swamp lands in the old glacial valleys. Although locally rather common on the headwaters of the Wannon and occurring elsewhere in the wettest parts of the South-East of South Australia, it nowhere in the Grampians seems to cross the low divide to the headwaters of the northward flowing Fyans Creek. It is possible therefore that its distribution is intimately tied to the past climate of the Grampians region and on the headwaters of the Wannon and in the South-East of South Australia it may be a relict form making a last stand and witness to former wetter and possibly cooler conditions in the country south of the Grampians. Similar witness is perhaps borne by the postclimax communities of tree ferns and attendant *Pomaderris apetala* Labillardière thickets about Mt. Rosa.

ACKNOWLEDGMENTS.

I am indebted to Mr. S. Blake, of the Botanic Museum and Herbarium, Brisbane, for identifications of *Gahnia* sword grasses. He informs me that ours is perhaps the first report of *Gahnia microstachya* Benth from Western Victoria. A previous Victorian record, according to Mr. J. C. LeSoueŕ, is from the Avon Range, north of Stratford, Gippsland, where it was collected in 1854 by Baron F. von Mueller.

Prof. J. B. Cleland has kindly provided identifications of several shrubs and grasses and submitted others to Mr. A. W. Jessep, Director of the National Herbarium, Melbourne, for confirmation; I am indebted to both for their help.

Mr. Keith Hateley kindly placed his knowledge of the Kiata district and Little Desert at our disposal, enabling interesting series to be obtained within a minimum of time.

Mr. J. C. LeSoueŕ kindly consented to lodge an allotype female specimen of *H. c. lesoueŕi* in the South Australian Museum and he and Mr. B. B. Given

contributed freely of their knowledge and experience to make the visits to the Grampians a success.

Mr. F. E. Wilson kindly loaned two paratype specimens of *Hesperilla c. lesouefi* which have been figured. Mr. R. Fisher, my companion on the second visit to the area, also kindly placed type material in the South Australian Museum when my own takings were not adequate for the purpose. All material listed, other than that in the collections of my companions, has been presented to the South Australian Museum.

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EXPLANATION OF PLATES.

Plate xviii.

Fig. a-b, *Heteronympha banksii nevina*.

(a) holotype male, Mt. Rosea, 1,000 ft., 28th January, 1952.

(b) allotype female, same locality, 13th February, 1952.

Fig. c-d, *Heteronympha banksii banksii*.

(c) male, Clifton, 16th March, 1898. (d) female, Roseville, 4th April, 1904.

Fig. e-f, *Heteronympha banksii mariposa*.

(e) holotype male, McPherson Range, March, 1891. (f) allotype female, same details.

Fig. g, *Heteronympha banksii nevina*.

paratype female, Mt. Rosea, 1,000 ft., 9th February, 1952, underside (specimen in Fisher collection).

Fig. h, *Heteronympha solandri angela*.

allotype female, Mt. Rosea, 2,000 ft., 25th December, 1951.

Plate xix.

Fig. a-b, *Heteronympha solandri solandri*.

(a) male, Mt. Hotham, January, 1904. (b) female, same details.

Fig. c-d, *Heteronympha solandri angela*.

(c) holotype male, Mt. Rosea, 2,000 ft., 25th December, 1951. (d) allotype female, same details.

Fig. e, *Heteronympha solandri solandri*.

male, Mt. Donna Buang, 4,000 ft., 12th February, 1949, underside.

Fig. f, *Heteronympha banksii mariposa*.

holotype male, McPherson Range, March, 1891, underside.

Fig. g, *Heteronympha banksii nevina*.

paratype male, Mt. Rosea, 22nd January, 1952, underside (specimen in Fisher Collection).

Fig. h, *Heteronympha banksii banksii*.

male, Clifton, 16th March, 1898, underside.

Plate xx.

Fig. a-c, *Pseudalmenus chlorinda fisheri*.

(a) holotype male, Mt. Victory, 1,200 ft., 6th January, 1952.

(b) paratype male, same locality, 7th January, 1952.

(c) paratype male, same locality, 10th January, 1952, underside.
(Last-named specimen in Fisher Collection.)

Fig. d, *Pseudalmenus chlorinda chlorinda*.

male, Kingston, Tasmania, November.

Fig. e-f, *Pseudalmenus chlorinda zephyrus*.

(e) male, Gisborne, 30th October, 1894. (f) male, Moe, October, 1922, underside.

Plate xxi.

Fig. a-d, *Hesperilla crypsargyra lesouefi*.

(a-b) paratype male, Mt. William, 19th December, 1950, upper and under side. (c-d) paratype female, Mt. William, December, 1950, upper and under side (specimens in F. E. Wilson collection).

Fig. e-h, *Hesperilla crypsargyra crypsargyra*.

(e-f) male, Blackheath, upper and under side. (g-h) female, Katoomba, upper and under side.

Fig. i-l, *Hesperilla crypsargyra hopsoni*.

(i-j) male, Barrington Tops, upper and under side. (k-l) female, Barrington Tops, upper and under side.

Fig. m-n, *Hesperilla crypsargyra lesouefi*.

(m) subadult larva, Mt. William. (n) pupae, showing three aspects.